

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a method for computing and regulating the distribution of linear load in a multi-nip calender in which a material web is passed through the nips, the nips being defined by a set of rolls arranged in a substantially vertical position and including a variable-crown upper roll, a variable-crown lower roll, the variable-crown upper roll and variable-crown lower roll being structured and arranged to selectively apply a load to at least two intermediate rolls arranged between the upper roll and the lower roll, said at least two intermediate rolls being provided with support cylinders, all of the rolls in the set of rolls being supported such that, when in nip-defining relationship, the rolls have bending lines which are curved downward, the improvement comprising the steps of:

assigning a value to at least one variable representing a physical property affecting the bending of each of said at least two intermediate rolls;

applying a first force to said at least two intermediate rolls by means of said variable-crown upper roll;

applying a second force to said at least two intermediate rolls by means of said variable-crown lower roll;

applying a support force to each one of said at least two intermediate rolls by means of said support cylinders;

adjusting at least one of the following to place the set of rolls in a state of equilibrium and a predetermined state of deflection:

the first force, the second force, at least one of the support forces and at least one of weight forces exerted on each of said at least two intermediate rolls; and

wherein the step of assigning a value to at least one variable representing a physical property affecting the bending of each of said at least two intermediate rolls comprises the step of assigning

a value to bending rigidity, mass, shape, and material of each of said at least two intermediate rolls;
and

further comprising computerized modeling using all essential elements of the multi-nip calender including all physical properties of the set of rolls and selecting a type and a position of each roll in the set of rolls;

determining of regulation parameters based on the computerized modeling;

regulating of the multi-nip calender assembled based on the computerized model assembled with the type and the position of each roll in the set of rolls.

2. (Canceled)

3. (Canceled)

4. (Original) The method of claim 1, wherein said at least one physical property is selected from a group consisting of bending rigidity, mass, shape, and material.

5. (Previously Presented) The method of claim 1, further comprising the step of:
providing each one of said at least two intermediate rolls with different deflection properties.

6. (Previously Presented) The method of claim 1, further comprising the step of:
treating the set of rolls as a single unit when adjusting the at least one of the first force, the second force, at least one of the support forces and at least one of the weight forces exerted on each of said at least two intermediate rolls.

7. (Canceled)

8. (Original) The method of claim 1, further comprising the step of:
supporting said at least two intermediate rolls on a frame of the calender such that said at least two intermediate rolls are freely movable.

9. (Previously Presented) The method of claim 1, wherein the at least one of the first force, the second force, at least one of the support forces and at least one of the weight forces exerted on each of said at least two intermediate rolls is such that a loading angle is about 90°, the loading angle being defined as the distribution of linear load in the set of rolls from nip to nip.

10. (Previously Presented) The method of claim 1, wherein the at least one of the first force, the second force, at least one of the support forces and at least one of the weight forces exerted on each of said at least two intermediate rolls is regulated such that a loading angle is adjustable in a range from about 75 to about 80, the loading angle being defined as the distribution of linear load in the set of rolls from nip to nip.

11. (Currently Amended) In an arrangement for computing and regulating the distribution of linear load in a multi-nip calender in which a material web is passed through the nips, the nips being defined by a set of rolls arranged in a substantially vertical position, comprising:

a variable-crown upper roll,

a variable-crown lower roll,

at least two intermediate cylinders, said at least two intermediate cylinders positioned between said variable crown upper roll and said variable crown lower roll,

wherein the variable-crown upper roll applies a first force to said at least two intermediate cylinders and variable-crown lower roll applies a second force to said at least two intermediate cylinders, said at least two intermediate rolls being provided with support cylinders, said support cylinders applies a support force to each one of said at least two intermediate rolls and wherein the set of rolls being supported such that, when in nip-defining relationship, the set of rolls have bending

lines which are curved downward,

an automation system and a computing unit for assigning at least one value to a variable representing a physical property affecting the bending of each of said at least two intermediate rolls and for adjusting at least one of the following to place the set of rolls in a state of equilibrium and a predetermined state of deflection:

the first force, the second force, at least one of the support forces and at least one of weight forces exerted on each of said at least two intermediate rolls; and

wherein the at least one physical property affecting the bending of each of said at least two intermediate rolls is bending rigidity, mass, shape, and material of each of said at least two intermediate rolls;

wherein the computing unit defines a computerized model using all essential elements of the multi-nip calender including all physical properties of the set of rolls and a type and a position of each roll in the set of rolls is selected;

wherein the automation system regulates the multi-nip calender based on the computerized model assembled with the type and the position of each roll in the set of rolls.

12. (Previously Presented) The arrangement of claim 11, wherein each one of said at least two intermediate rolls has different deflection properties.

13. (Original) The arrangement of claim 11, wherein the set of rolls is treated as a single unit.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Previously Presented) The method of claim 1, prior to the adjusting step further comprising the step of:

calculating a linear load force applied to each one of said at least two intermediate rolls.